UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/005,049	12/04/2001	Stuart T. Linsky	22-0149	9203

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EXAMINER
GHULAMALI, QUTBUDDIN

ART UNIT	PAPER NUMBER
2637	

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Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

	Application No.	Applicant(s)
Office Action Summary	10/005,049	LINSKY ET AL.
	Examiner	Art Unit	
	Qutub Ghulamali	2637	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>20 October 2005</u>.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-29</u> is/are pending in the application.

　　4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) <u>1-9 and 18-27</u> is/are allowed.

6)☒ Claim(s) <u>10-17, 28 and 29</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

　　Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

　　Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

　　a)☐ All b)☐ Some * c)☐ None of:

　　　　1.☐ Certified copies of the priority documents have been received.

　　　　2.☐ Certified copies of the priority documents have been received in Application No. _____.

　　　　3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

　　* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
　　Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
　　Paper No(s)/Mail Date. _____ .

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

U.S. Patent and Trademark Office

PTOL-326 (Rev. 7-05)　　　　　　　　　Office Action Summary　　　　　Part of Paper No./Mail Date 20060106

DETAILED ACTION

Acknowledgement

1.　　This Office Action is responsive to the Remarks/Arguments/Amendment filed by the

applicant on 10/20/2005.

Response to Arguments

2.　　Applicant's arguments with respect to claims 10-17 have been considered but are moot in

view of the new ground(s) of rejection.

The rejection based on the new art follows:

Claim Rejections - 35 USC § 103

3.　　The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in
> section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are
> such that the subject matter as a whole would have been obvious at the time the invention was made to a person
> having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the
> manner in which the invention was made.

4.　　Claims 10 and 28 rejected under 35 U.S.C. 103(a) as being unpatentable over Caso (USP

6,236,687) in view of Smith et al (US Pub. 2004/0105516) and further in view of Dent (USP

5.151,919).

Regarding claims 10 and 28, Caso discloses a demodulator unit (fig. 1, element 22).

demodulate an input signal in a communications system comprising:

a first block decoder configured to decode bursts of the input modulated signal at a decode rate

to generate a set of associated code words and a phase/frequency error estimate (col. 3, lines 23-

42; col. 4, lines 9-17). Caso, even though discloses a decision directed phase locked loop with a

first converter, however, does not explicitly disclose a plurality of phase locked loops wherein

one of a plurality of phase locked loops (PLL) is adapted to selectively apply excess processing

power to a burst of input modulated signals; and

a selection circuit which identifies a burst of said input modulated signal to be demodulated

with excess processing power, said selection circuit providing said identified burst to said one

of said phase locked loops which is adapted to selectively apply excess processing power in

order to re-process said burst of said input modulated signal.

Smith in a similar field of endeavor discloses a plurality of PLL with composite phase-

frequency detectors (decoders) (decoding pulses into digital sequence or code words can be

performed by simple peak detectors in a conventional analog read channel or by discrete time

sequence detectors) which measures the phase and frequency error in each loop and provides a

corrective signal to its associated voltage control oscillator (VCO1, VCO2, VCO3 – 34, 35, 36

and adaptively evaluate the noise level of incoming signal components and assess each loop

error voltage if excessive (page 4, section 0048; page 5, section 0051; page 6, section 0061).

Therefore it would have been obvious to a person of ordinary skill in the art at the time

invention was made to utilize a plurality of PLLs as taught by Smith in the communication

system of Caso because use of a plurality of PLLs can provide a much improved lock, larger

tracking range and rapid frequency acquisition for a better lock against harmonic frequency

locking.

The combined art of Caso and Smith, however, does not show a selection circuit which identifies a burst of said input modulated signal to be demodulated with excess processing power, said selection circuit providing said identified burst to said one of said phase locked loops which is adapted to selectively apply excess processing power in order to re-process said burst of said input modulated signal.

Dent is a similar field of endeavor discloses a selector (sorter 122) which identifies a burst of said input modulated signal to be demodulated with excess processing (strongest signal) power, said selection circuit providing said identified burst to said one of said phase locked loops which is adapted to selectively apply excess processing power in order to re-process said burst of said input modulated signal (col. 7, lines 30-60). It would have been obvious to a person of ordinary skill in the art at the time invention was made to use a selection circuit (sorter) as taught by Dent in the combined art of Caso and Smith so as to identify the signal strength so that the strongest signal is demodulated and extracted in order to reprocess (next data period).

5.   Claims 11-17, 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Caso et al (US Patent No. 6,236,687) in view of Smith et al (US Pub. 2004/0105516) and Dent (USP 5,151,919) as applied to claim 10 above, and further in view of Khayrallah et al (US Patent 5,983,385).

Regarding claim 11, Caso, Smith and Dent in combination disclose substantially every feature of the claimed invention in claim 10. The combination, however, lacks explicit disclosure regarding first block decoder generate reliability metric results.

Khayrallah in a similar field of endeavor discloses a communications system and method wherein a selective recursive decoding process based on reliability metric produced by the

decoding means (556a and 556b) (col. 6, lines 38-55; col. 8, lines 10-21). Therefore it would

have been obvious to one skilled in the art at the time the invention was made to use a block

decoder to generate reliability metric results as taught by Khayrallah in the combined art of Caso,

Smith and Dent because it can provide enhanced capabilities with less complex encoder and

decoder designs.

Regarding claim 12, Caso, Smith and Dent in combination disclose substantially every

feature of the claimed invention. The combination, however, lacks explicit disclosure regarding

reliability metric results comprise correlation results taken during decoding by said first block

decoders.

Khayrallah in a similar field of endeavor discloses reliability metric results comprise correlation

results taken during decoding by said first block decoders (col. 7, lines 20-42). Therefore it

would have been obvious to one skilled in the art at the time the invention was made to use a

reliability metric results with the coding process as taught by Khayrallah in the combined circuit

of Caso, Smith and Dent because it can provide correlation and error correction during decoding.

Regarding claims 13, 15 and 29, Caso, Smith and Dent in combination discloses

substantially every feature of the claimed invention. Caso, Smith and Dent disclosure, however,

is silent regarding a second decoder selects code words from said set of associated code words

based on the reliability metric results from said first block decoders.

Khayrallah in a similar field of endeavor discloses a second decoder selects code words from

said set of associated code words based on the reliability metric results from said first block

decoders (col. 7, lines 20-42).

It would have been obvious to one skilled in the art at the time the invention was made to use a code words from first decoder by the second decoder based on reliability results from the first decoder as taught by Khayrallah in the arts of Caso, Smith and Dent so as to provide improved burst error correcting capability and efficiency in decoding.

Regarding claims 14 and 17, Caso, Smith and Dent in combination discloses substantially every feature of the claimed invention. Caso, Smith and Dent combination, however, is silent regarding a selection circuit identify said burst based on the reliability metric results from first block decoder. Kayrallah in a similar field of endeavor discloses codeword selection circuit identifies burst based on the reliability metric results from first block decoder (col. 7, lines 56-67; col. 8, lines 10-20). It would have been obvious to one skilled in the art at the time the invention was made to use a selection circuit identify burst in the decoding process as taught by Khayrallah in the combined circuit of Caso, Smith and Dent because it can improve the iterative decoding process and mitigate errors in decoding.

Regarding claims 16, Caso, Smith and Dent in combination discloses substantially every feature of the claimed invention. The combination, however, is silent regarding a second outer block decoder pre-selects the code words from among said set of associated code words. Kayrallah in a similar field of endeavor, discloses second outer block decoder pre-selects the code words from among said set of associated code words (col. 8, lines 10-20). It would have been obvious to one skilled in the art at the time the invention was made to use a second outer block decoder pre-select the code words from among said set of associated code words as taught by Khayrallah in the arts of Caso, Smith and Dent because it can improve the iterative decoding process by minimizing errors.

Allowable Subject Matter.

6.   Claims 1-9, 18-27 allowed.

Conclusion

7.   The prior art made of record and not relied upon is considered pertinent to applicant's

disclosure.

US Patents:

Sumi (US Pub. 2001/0048329) discloses a PLL device and programmable frequency division.

Locker et al (USP 6,297,702) shows a Plurality of Phase Lock Loop system and method with

phase detectors.

Beherns (USP 5,572,558) discloses a PID Lock Loop filter for timing recovery in a sampled

amplitude read channel.

Alisobhani (USP 6,760,393) discloses a spread spectrum radio oscillator frequency correction.

Publications:

Gottfried Ungerboeck, "Channel Coding With Multilevel/Phase Signals", IEEE 1981

8.   Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Qutub Ghulamali whose telephone number is (571) 272-3014.

The examiner can normally be reached on Monday-Friday from 8:00AM - 5:00PM.

    If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Jay Patel can be reached on (571) 272-2988. The fax phone number for the

organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent

Application Information Retrieval (PAIR) system. Status information for published applications

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

applications is available through Private PAIR only. For more information about the PAIR

system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR

system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

QG.
January 9, 2006.

JEAN B. CORRIELUS
PRIMARY EXAMINER
1-13-06